

Art. 34 Amst.

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CLAIMS

1. Process of intra-uterine fertilisation in mammals characterised in that it comprises the following steps:

a) providing a container (15, 115, 215) which can be introduced into and lodged in the uterine cavity of the mammal;

b) filling the container (15, 115, 215) with a culture medium, at least one ovocyte of the mammal and spermatozoa;

c) lodging the filled container (15, 115, 215) in the uterine cavity;

d) leaving the container for a specific period of time to allow fertilisation of the ovocyte(s) therein;

e) allowing the contents of the container to escape into the uterine cavity.

2. Process according to claim 1 characterised in that step e) is effected by ejecting the contents of the container (215) into the back of the uterine cavity.

3. Process according to claim 1 characterised in that step e) is effected by biodegradation of at least a portion of the container (15, 115).

4. Process according to claim 2 characterised in that the container lodged in the uterus is held in position at the neck of the uterus during steps c) to e).

5. Process according to claim 3 characterised in that in step c) the container (215) is lodged towards the back of the uterus.

6. Device for fertilisation in mammals comprising a tube (201) closed at one, so-called lower end (203) by a plug (204) acting as a watertight piston, characterised in that towards its lower end (203) said tube (201) is fastened to a holding device (220, 320,

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420) which can be removably fixed to the neck of the uterus of the mammal after passage of the tube through the opening in the neck of the uterus and lodging of the tube in the uterus.

5 7. Device according to claim 6 characterised in that the tube (201) comprises a flange (450) at its lower end (203).

a 8. Device according to claim 6 ~~or claim 7~~ characterised in that the other, so-called upper end (202) of the tube (201) is closed by a plug (301) of biodegradable material which can be ejected by displacement of the plug (204) acting as a (watertight) piston.

a 9. Device according to ~~any one of claims 6 through 8~~ ^{Claim 6} characterised in that the tube (201) is fastened to the holding device (220, 320, 420) by means of a longitudinal bore (221, 421) through the latter.

a 10. Device according to ~~any one of claims 6 through 9~~ ^{Claim 6} characterised in that the holding device (220, 320, 420) comprises a first section (222) (which can be introduced into the neck of the uterus) and a second section (223) which can be positioned outside and abutted against the cervix, the first section (222) comprising an expansible element (222A) having a rest position for insertion into the cervix and second position wherein it presses against the internal walls of the neck of the uterus.,

11. Device according to claim 10 characterised in that the expansible element (222A) is formed of thin flexible material which can radially expand into the second position.

a 12. Device according to claim 10 ~~or claim 11~~ characterised in that the expansible element (222A) comprises at least two substantially longitudinal tangs (222B), each tang having a mobile lower end (222C) and

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an upper end (222D) which is fixed longitudinally relative to the tube (201).

13. Device according to claim 12 characterised in that the upper end (222D) of the expansible element (222A) is fixed to a collar (211) welded to the tube (201).

a 14. Device according to claim 12 ~~or claim 13~~ characterised in that the holding device (220, 320, 420) further comprises a mobile section (223A, 423A) to control the longitudinal position of the lower end (222C) of the expansible element (222A) and a section (222E, 422E) which is fixed relative to the tube (201) on which the mobile section (223A, 423A) can move.

15. Device according to claim 14 characterised in that the fixed section (222E, 422E) and the mobile section (223A, 423A) comprise complementary screwthreads (207, 207A, 431, 436) which allow the mobile section (223A, 423A) to turn and move longitudinally relative to the fixed section (222E, 422E).

20 16. Device according to claim 15 characterised in that the screwthreads (431, 436) are on an external surface of the fixed section (422E) and on an internal surface of a bush (435) of the mobile section (423A).

a 25 17. Device according to claim 14 ~~or claim 15~~ characterised in that the mobile section (223A) comprises a knurled disc (208) acting as a nut on a longitudinal extension (224) of the fixed section (222E) of the first section (222) of the holding device (220, 320), the extension (224) comprising on an external surface a complementary screwthread (207) associated with that (207A) of the knurled disc (208).

30 18. Device according to claim 17 characterised in that the upper end (222D) of the expansible element (222A) is attached to the upper end of the extension (224) of the fixed section (222E).

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19. Device according to ~~any one of claims 14 through 18~~ *Claim 14* characterised in that the fixed section (222E) comprises a bore (226) of greater diameter than the tube (201) for receiving a pusher device (500) for displacing the plug (204) towards the upper end (202) of the tube (201).

20. Device for fertilisation in mammals comprising a tube (11, 110) closed at at least one of its ends, characterised in that the tube comprises a wall (100) of a material which will be biodegraded in a specific time period by its intended contents, i.e. ovocyte, spermatozoa and culture medium, and by an intended intra-uterine environment, the tube having a length which is less than or equal to the depth of the uterine cavity of the mammal.

21. Device according to claim 20 characterised in that the tube is made entirely of a biodegradable material.

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22. Device according to claim 20 ~~or claim 21~~ characterised in that the biodegradable material is a natural animal or vegetable polymer.

23. Device according to claim 22 characterised in that the natural polymer is selected from collagen, fibrinogen and a polymeric sugar.

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24. Device according to ~~any one of claims 20 through 23~~ *Claim 20* characterised in that the thickness of the wall (100) is such that the biodegradation time period is 15 to 55 hours.

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25. Device according to ~~any one of claims 20 through 24~~ *Claim 20* characterised in that the thickness of the wall (100) is between 0.01 and 1 mm.

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26. Device according to ~~any one of claims 20 through 25~~ *Claim 20* characterised in that it further comprises a device (20) for implantation of said tube (11) in the uterus of the mammal.

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27. Device according to claim 26 characterised
in that the implantation device (20) comprises a
cylindrical tube (21) whose internal diameter is
substantially equal to the external diameter of said
5 tube (11).